



Original Date: March 21, 2022  
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Mr. Charles Gregory  
Project Manager  
Division of Environmental Remediation  
New York State Department of Environmental Conservation  
625 Broadway  
Albany, New York

**RE: WORK PLAN FOR GROUNDWATER MONITORING WELL INSTALLATION AND SOIL VAPOR INTRUSION ASSESSMENT, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) SITE # 828122, 15 CAIRN STREET, ROCHESTER, NEW YORK, 14611 (HRP # DEC1011.RA)**

Dear Mr. Gregory:

HRP Associates, Inc. (HRP) has prepared this letter work plan to summarize subcontractor and professional services necessary to install new and replace pre-existing groundwater monitoring wells at the former Barthelmes Manufacturing Site (Barthelmes), located at 15 Cairn Street, Rochester, New York (**Figure 1**). HRP understands that the Department is contracting HRP to replace monitoring wells that are currently obstructed and/or were allegedly destroyed during site improvement/paving activities according to information received through NYSDEC's standby contractor, Groundwater Environmental Services, Inc. (GES). A preliminary cost estimate regarding the replacement of these monitoring wells was requested by electronic mail (e-mail) on September 17, 2021, and submitted to the Department on September 27, 2021. This detailed scope of work (SOW) has been prepared in response to the project review conference call on November 16, 2021. This SOW includes installation of sixteen (16) monitoring wells as shown on **Figure 2** including:

- Installation of 4 new off-site overburden groundwater monitoring wells,
- Replacement of 4 on-site bedrock monitoring wells, and
- Replacement of 8 on-site overburden monitoring wells.

Additionally, due to the presence of chlorinated compounds in groundwater beneath the Site building, HRP will complete a soil vapor intrusion (SVI) investigation in accordance with the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in New York State, (2006, updated 2017).

The SOW below is provided as an addendum to the existing Schedule 1 for D009808-011, and represents Task 5 – Supplemental Site Investigation.

## **Task 5A: Preliminary Site Activities**

### Utility Underground Clearance and Ground Penetrating Radar

Prior to implementing any intrusive activities, a utility clearance will be conducted by a Ground Penetrating Radar (GPR) contractor. The GPR subcontractor will rely upon multiple lines of evidence to ensure to the maximum extent practicable that subsurface features are identified prior to commencement of intrusive work. The drilling contractor will request public utility mark outs through NYS Code Rule 753/Dig Safe System.

GPR is a non-destructive and non-intrusive geophysical exploration technique that uses radar waves to detect subsurface objects, such as tanks, drums, and piping. The GPR is also capable of detecting discontinuities in the subsurface materials indicative of excavated and backfilled areas. The objective of performing this survey is to not only make the subsurface investigation as safe as possible for the field staff, but also to identify possible sources and migration pathways (utility corridors, etc.).

A subsurface interface radar system and a 400 MHz antenna will be used to provide real time data during the survey. The unit will be equipped with a video display microprocessor-controlled module, used to convert the Subsurface Interface Radar data to video, which will be displayed on a self-contained monitor. Anomalies identified during the GPR survey will be marked by the contractor using paint, and may include buried natural gas, electric, water, communication, and sewer utilities.

An electromagnetic (EM) survey will be conducted in conjunction with the GPR survey, to locate any potentially buried metal objects (drums, tanks, etc.), and to better define subsurface features at the Site.

HRP requests that a knowledgeable party (client/Site owner) provide all available Site utility information prior to the survey or drilling activities and, if possible, a knowledgeable Site person to clear each boring location prior to drilling. HRP will not be able to effectively perform GPR and utility clearance, should parked cars and scrap metal be present above drilling locations. If previously installed monitoring wells are located using GPR, they will be marked, and not replaced by the drilling contractor.

## **Task 5B: Drilling Activities and Monitoring Well Replacement**

### **Community Air Monitoring Plan**

***To ensure the protection of receptors surrounding the Site, HRP has developed and will implement a Community Air Monitoring Program (CAMP), which requires real time monitoring of volatile organics and dust during the remedial investigation. The CAMP, included as Attachment A will be implemented during all intrusive activities including removal of the concrete slab and demolition and backfill of the basement foundation.***



### Off-site Subsurface Soil Characterization

After off-site access is arranged, HRP will mobilize to the Site. Soil samples from off-site locations will be collected and used to characterize subsurface conditions that have not been identified during previous investigations. Soil samples will be collected using split-spoons (or similar) in 4 off-site borings from surface grade to approximately 20 feet below grade (ft bg), or refusal as shown on **Figure 2**. Specifically, HRP will collect data and record visual and olfactory observations (i.e. odor, staining) observed during drilling activities. Soil samples from off-site locations will be screened for volatile organic compounds (VOCs) using a photoionization detector (PID), and any obvious evidence of impacts will be noted and used for selection of soil samples.

One soil sample from each off-site boring will be submitted for laboratory analysis based on obvious visual or olfactory indications of impacts. In the absence of observed impacts, one sample from the water table interface will be secured for laboratory analysis. An estimated total of eight 8 grab samples (4 normal, 1 duplicate, 1 Matrix Spike and 1 Matrix Spike Duplicate, 1 Trip Blank) will be analyzed by a NYSDEC-contracted laboratory for Target Compound List VOCs +10 by United States Environmental Protection Agency Method 8260.

The four proposed off-site wells are to be installed using a hollow stem auger (HSA) drill rig, to a total depth of approximately 20 feet. Unless significantly elevated VOC concentrations are observed (indicating that alternative materials such as stainless steel be used) monitoring wells will be constructed using 2-inch diameter schedule-40 PVC pipe riser, and 10 feet of schedule-40 PVC 0.010-inch slot screen that will be positioned to intercept the water table.

Monitoring wells will be completed using flush-mount protective casings, and are to be finished at the surface with concrete. Replacement off-site overburden monitoring wells will be named MW-101, MW-102, MW-103, and MW-104.

Investigation Derived Waste (IDW) that is generated from the subsurface characterization will be handled in accordance with NYSDEC DER-10. HRP and the drilling contractor will be responsible for supplying the equipment and materials necessary for the proper handling and storage of the IDW, such as Department of Transportation (DOT) approved 55-gallon drums, roll-off containers and/or holding tanks. All containers will be labeled and stored appropriately, if applicable on the Barthelmes property.

### On-Site Monitoring Well Replacement

A hollow-stem auger (HSA) drilling rig will be used to advance through overburden material and set each replacement overburden monitoring well. Soil borings installed on-site for the purposes of replacing former monitoring wells (MW-2, MW-5, MW-16, MW-31, MW-17, MW-18, MW-19, MW-32, HRP-BR-3, RW-4, RW-5, and HRP-BR-4) will not be sampled. Monitoring wells will be set to an estimated depth of 17 ft bg, and will be screened using from 7 ft bg to 17 ft bg. However, the target depth and construction of these wells will be dependent on the subsurface conditions encountered in the field.

Unless significantly elevated VOC concentrations are observed (indicating that alternative materials such as stainless steel be used) monitoring wells will be constructed using 2-inch diameter schedule-40 PVC pipe riser, and 10 feet of schedule-40 PVC 0.010-inch slot screen that will be positioned to intercept the water table. Monitoring wells will be completed using flush-mount protective casings, and are to be finished at the surface with concrete.

Replacement monitoring wells will be named using an "A" suffix (ex. MW-2A, MW-32A, MW-5A, MW-16A, MW-31A, MW-17A, MW-18A, MW-19A), consistent with the former monitoring wells.

Subsequent to replacement of overburden monitoring wells, the drilling contractor will install/replace four 4.0-inch diameter bedrock wells using a rollerbit, or similar, to advance through bedrock. Anticipated total bedrock well depth will be approximately 40 feet below ground surface, or approximately 10 feet into competent rock as were the former bedrock wells. Bedrock monitoring wells will be completed using casing, approximately 30 feet of PVC riser, and finished at the surface with a protective casing and concrete. Replacement bedrock wells will be designated as HRP-BR-3A, RW-4A, RW-5A, and HRP-BR-4A, as depicted in **Figure 2**.

#### Monitoring Well Development and Sampling

Each newly installed well will be developed a minimum of 24 hours after completion by pumping and surging for two hours or until the field parameters stabilize for a minimum of three consecutive readings of 10 percent variability of less. The field parameters will include temperature, pH, and specific conductance. In addition, the turbidity of the groundwater should achieve a reading of 50 Nephelometric Turbidity Units (NTUs) or less during the field parameter readings.

Prior to sampling, depth to water measurements will be collected from all monitoring wells using a water level meter graduated in 0.01-foot increments. Monitoring wells will be measured from the top of each surveyed point prior to sampling activities. Data from each monitoring well will be used to construct a groundwater contour map to determine the direction of groundwater flow and hydraulic gradient.

Samples will be collected from newly installed wells a minimum of seven days after well development has been completed. A complete synoptic round of water levels will be taken prior to the start of groundwater sampling. Groundwater samples will be collected from all Site wells in general accordance with EPA low-flow groundwater sampling procedures. Groundwater samples from on/off-site wells will be collected and analyzed by Pace for laboratory analysis of Target Compound List VOCs +10 by EPA Method 8260.

Groundwater quality parameters will be analyzed in the field at on/off-site wells, and will include Dissolved Oxygen (DO), Oxidation Reduction Potential (ORP), and pH. Select monitoring wells (MW-31A, MW-16A, MW-18A, and MW-32A) will be sampled for laboratory analysis of natural attenuation parameters, and will include:

- Total and Dissolved Iron and Manganese by EPA Method 3005A
- Chloride and Sulfate by EPA Method 300.0

- Sulfide by EPA Method SM4500 S2F
- Nitrate by EPA Method 353.2
- Total Organic Carbon (TOC) by EPA Method 5310C
- Alkalinity by EPA Method 310.2
- Methane, Ethane and Ethene by EPA Method RSK 175
- Carbon Dioxide by EPA Method RSK 175

All analytical samples will be collected using appropriate Quality Assurance/Quality Control (QA/QC) methods, and reported by Pace using NYSDEC Method Category B. The laboratory will submit analytical results to HRP in NYSDEC EDD format.

### Decontamination & Investigation Derived Waste

Non-dedicated sampling equipment (i.e., water level indicators, etc.) will be subject to decontamination procedures prior to each sample collected to reduce the potential for cross-contamination as described in HRP's Generic Field Activities Plan. The decontamination procedures will include the use of a scrub wash with a solution consisting of Alconox® detergent and potable water followed by a rinse with de-ionized water. The decontaminated equipment will be stored in clean environments (i.e., the manufacturer's storage case). Decontamination fluids will be properly labeled and securely stored in the designated waste-container staging area.

Material that is visually stained, or exhibits strong odors may be segregated from non-impacted material. Additionally, drill cuttings which are stored/disposed on-site will be monitored for volatile emissions and for fugitive dust emissions. Monitoring instruments available at the Site as determined by the site-specific HASP may generally be sufficient. If any action level specified in the HASP is exceeded, corrective actions shall be implemented.

Decontamination fluids will be containerized separately from other IDW, and any decontamination fluids that do not exhibit evidence of impacts will be containerized separately from those exhibiting evidence of impacts.

All contaminated drill cuttings will be containerized on-site, in DOT- approved 55-gallon drums. All drilling equipment will be decontaminated using a decontamination pad, pressure-washer, Alconox®, and water between drilling locations. All decontamination and purge water will be containerized and labeled for future disposal.

### Site Survey

The subject property and surrounding areas will be surveyed by a New York State licensed land surveyor. The field survey will include establishing project horizontal control and the collection of planimetric features for the development of 2D mapping. Subsequently, a base map of the Site will be revised using Computer Aided-Design (CAD) software that will be utilized to place all sampling locations from previous on-site and off-site investigations on the existing base map. Locations will be placed on the base map by geo-referencing previous figures into the local CAD coordinate system, and will include all monitoring wells. The elevations of all monitoring well casings will be established to within an accuracy of plus or minus 0.01 feet based on an arbitrary

local vertical benchmark. A notch will be etched in all interior casings, or a permanent black mark, to provide a reference point for all future groundwater elevation measurements.

### Soil Vapor (SVI) Investigation

In January 2007, an SVI investigation was completed by Leader Environmental Services, and concluded "... the sub-slab vapor and indoor air requires mitigation." ~~*Since Barthelemes is a manufacturing property with an OSHA compliant Hazard Communication Program, the need for immediate mitigation is not required at this time, because the levels of TCE found in the indoor ambient air do not exceed OSHA's action level of 268.7 milligrams per cubic meter.*~~ No further information regarding indoor air issues were included in the project files provided to HRP for review.

To assess potential impacts to receptors from gaseous vadose zone contamination, a soil vapor intrusion investigation will be performed by HRP at the Site, at the request of NYSDEC and the New York State Department of Health (NYSDOH). The vapor intrusion investigation will consist of three sub-slab soil gas (SS) samples, three indoor air (IA) samples, three outdoor air (OA) samples, and one ambient air sample (AA), collected during the heating season. ***At the request of the NYSDOH, indoor air samples will be collected from a regularly occupied office space, a common area of the office space, and from an unclaimed storage space (if one is available). If an unclaimed storage space is not available, a new location will have to be decided upon based on Site conditions and correspondence between HRP, NYSDEC, and NYSDOH. Sub-slab samples were also requested to be sampled concurrently with the indoor air samples. However, the sub-slab samples located within the office space will need property owner approval in order to be installed. This is due to the presence of finished flooring within these areas. Approval from the property owner will need to be obtained by the NYSDEC and/or the NYSDOH in order for HRP to install these points which may permanently damage any finished flooring. If a suitable location is available that does not require the destruction of flooring, a sub-slab sample may be collected from the office locations. An alternative sub-slab sample location may be maintenance or utilities closets if they are present and do not contain finished flooring. Locations of samples will depend on current Site configuration and access.***

SVI investigation samples will be collected in accordance with the New York State Department of Health's Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006. Locations of sampling points will be chosen with consultation between the NYSDEC and the NYSDOH.

HRP will install a new sub-slab access point in an adequate location beneath the concrete slab using a 3/8-in. diameter drill bit and will drill completely through the concrete floor slab using an electric hammer drill. NYSDEC and NYSDOH will be contacted, should HRP be unable to advance through the subfloor.

HRP will perform leak detection testing using helium tracer gas to confirm the competency of each vapor point. In the event that the probe fails the tightness test, the subsurface probe seal will be modified, and the integrity testing repeated.

Indoor and outdoor air samples will be collected simultaneous to sub-slab samples, and will be placed at a height corresponding to the average breathing level (i.e. approximately five feet above the ground surface). Samples will be collected at a flow rate no greater than 0.2 liters/minute, and the sampling duration will be at least ***eight two*** hours. Air samples will be collected in Summa canisters and analyzed using EPA Method TO-15. Samples will be submitted to Pace for analysis. In addition, a chemical inventory of the rooms where samples will be located will be completed prior to sampling, in accordance with the 2006 NYSDOH guidance.

### Green Remediation

Single-use starting, lighting, and ignition (SLI) batteries will not be used to power equipment during sampling procedures. SLI batteries are not appropriate, nor designed for continuous use by sampling personnel. Deep-cycle lead-acid and/or lithium-ion batteries shall be used in lieu of SLI batteries, to reduce the generation of waste batteries, and to conserve electricity during charging.

For smaller, handheld equipment (i.e. PID), rechargeable lithium-ion battery packs will be used, in lieu of disposable alkaline batteries, to reduce generation of waste. All spent rechargeable batteries will be disposed of at an appropriate facility, per the instructions of the manufacturer, if applicable.

Dedicated sample tubing shall be used at the Site, where applicable. Single use disposable tubing shall not be used at the Site. Restricting the implementation of single-use sampling tubing will minimize the generation of waste from the Site.

All vehicles, both on and off road (including construction equipment) will be shut off when not in use for more than 5 minutes, consistent with 6 NYCRR Part 217 Motor Vehicle Emissions, Subpart 217-3 Idling Prohibition for Heavy Duty Vehicles. Implementation of a vehicle idling policy will reduce fuel consumption by on-site equipment, and reduce emissions of greenhouse gases (GHGs).

### **Task 5C: Summary Report**

A summary report will be prepared as part of this work assignment following completion of the field activities. The summary report will provide a description of the field activities, and report any deviations from this work plan, present a physical description of the Site including geology and hydrogeology, present field observations and analytical data collected during field characterization, and provide an analysis and interpretation of the available data in the context of existing Site conditions. The report will include tabulated laboratory analytical results, Site maps, and a discussion of compound concentrations, including a comparison to NYSDEC Standards, Criteria, and Guidance (SCGs), as described in Section 3.13 of DER-10.



The summary report prepared as part of this assignment will also provide a summary of the general nature of environmental impacts on the Site to the extent investigated by the initial Site Characterization (SC), and Remedial Investigation (RI), including, without limitation, the off-site areas requiring further investigation, if warranted. The submitted report will include the report text, appropriate tables, figures, survey data, data summary tables, and boring logs in a PDF format.

Thank you for letting us assist you with this work and please do not hesitate to contact HRP at (518) 877-7101 with any questions that you may have regarding this SOW. We will update the project 2.11 upon approval of this SOW.

Sincerely,



Stefan Truex, P.G.  
Senior Project Geologist



David Stoll, P.G.  
Senior Project Manager

Attachments  
Figure 1 – Site Location Map  
Figure 2 – Site Plan

Cc: Jessica Kruczek, PE

# Attachment A

## Community Air Monitoring Plan

## **Community Air Monitoring Plan**

*Former Barthelmes Manufacturing, 15 Cairn Street, Rochester NY*

This Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress during remedial activities at the site. The CAMP is not intended for use in establishing action levels for workers respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

Reliance on the CAMP should not preclude simple, common sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Depending on the nature of known or potential contaminants at the site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary.

**Continuous monitoring** will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated onsite structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching.

**Periodic monitoring** for VOCs will be required during non-intrusive activities including but not limited to the collection of soil samples and groundwater samples. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuing monitoring may be required during sampling activities.

### **Particulate Monitoring, Response Levels, and Actions**

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\text{mcg}/\text{m}^3$ ) greater than the background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150  $\text{mcg}/\text{m}^3$  above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures

and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m<sup>3</sup> of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for State (DEC and DOH) personnel to review. If downwind readings exceed background for a 15-minute period, NYSDEC and NYSDOH will be notified.

### **VOC Monitoring, Response Levels, and Actions**

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using a photo ionization detector (PID) equipped with a 10.2 eV bulb. The PID will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of the vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less- but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All 15-minute readings will be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded. If downwind readings exceed background for a 15-minute period, NYSDEC and NYSDOH will be notified.